

# Capstone Project - 1

## Telecom Churn Analysis

### Team Members

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# Introduction

- **Churn** : It is a problem for Telecom companies as it is more expensive to acquire new customers than to keep the existing ones from leaving.
- **Company** : Orange S.A., formerly France Telecom S.A., is a French Multinational telecommunications corporation.
- It has 266 million customers worldwide and is the 11<sup>th</sup> largest mobile network operator in the world.
- **Data set** : The data set given is for the country **USA**, consisting of all 51 states. And the data set is of **.csv** format.

# Project Objectives

- To discover key factors responsible for customer churn.
- Perform EDA (Exploratory Data analysis) on different Variables present in the data set.
- To come up with ways or recommendation to ensure customer retention.

# Data set description



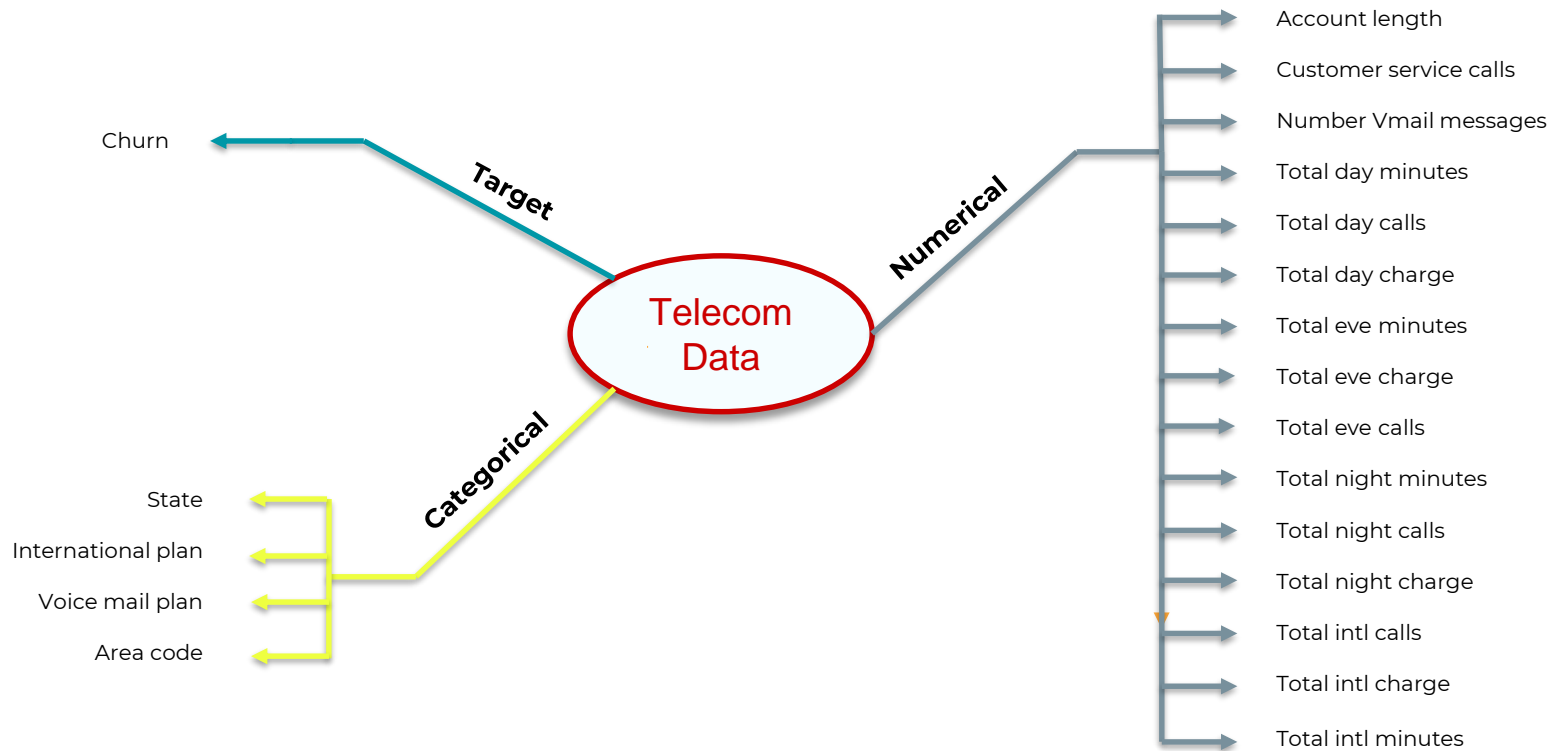
```
df.info()
```



```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3333 entries, 0 to 3332
Data columns (total 20 columns):
 #   Column                Non-Null Count  Dtype
---  -
 0   State                 3333 non-null   object
 1   Account length       3333 non-null   int64
 2   Area code            3333 non-null   int64
 3   International plan    3333 non-null   object
 4   Voice mail plan      3333 non-null   object
 5   Number vmail messages 3333 non-null   int64
 6   Total day minutes     3333 non-null   float64
 7   Total day calls       3333 non-null   int64
 8   Total day charge      3333 non-null   float64
 9   Total eve minutes     3333 non-null   float64
10  Total eve calls       3333 non-null   int64
11  Total eve charge      3333 non-null   float64
12  Total night minutes   3333 non-null   float64
13  Total night calls     3333 non-null   int64
14  Total night charge    3333 non-null   float64
15  Total intl minutes    3333 non-null   float64
16  Total intl calls      3333 non-null   int64
17  Total intl charge     3333 non-null   float64
18  Customer service calls 3333 non-null   int64
19  Churn                 3333 non-null   bool
dtypes: bool(1), float64(8), int64(8), object(3)
memory usage: 498.1+ KB
```

- There are a total of **3333** numbers of Rows present in the data set.
- The total number of columns present is **20**.
- There are **no missing values**.

# Data Summary

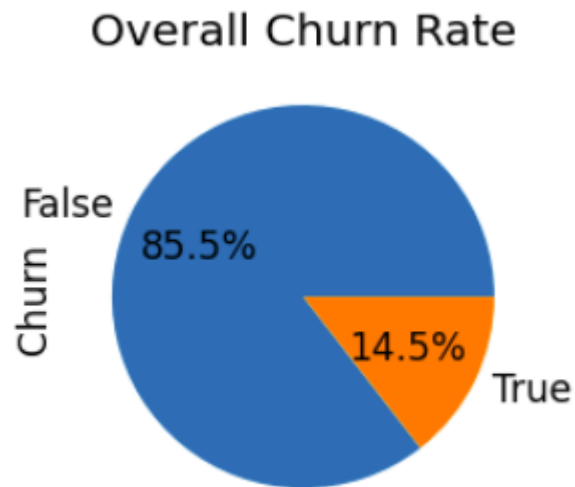
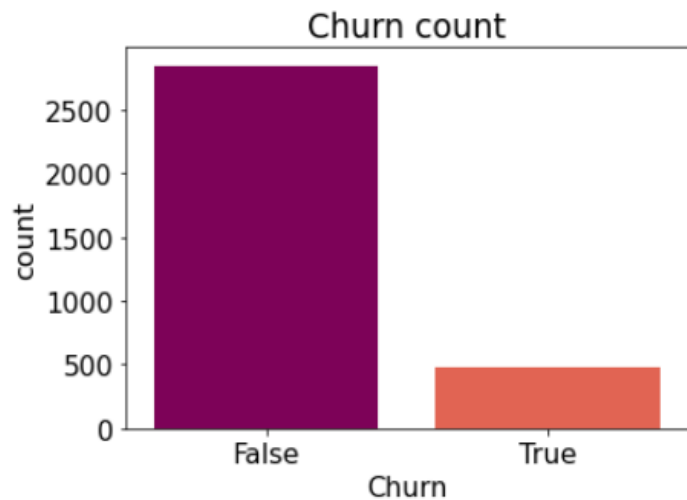


# EDA (Exploratory Data Analysis)

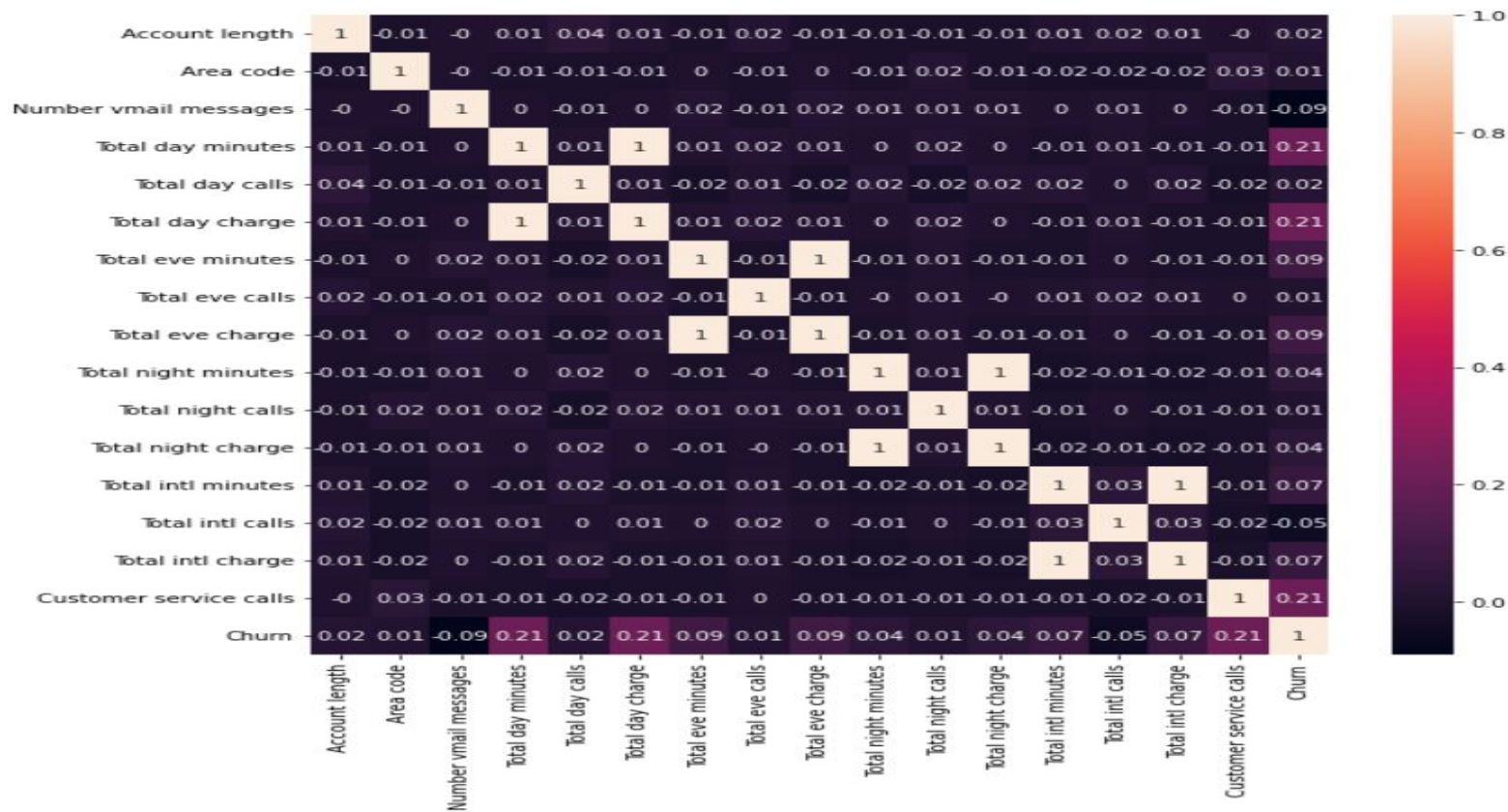
- Exploratory Data Analysis is an approach to analyze data sets and to summarize their main characteristics, often with visual methods.
- Data visualization using **Matplotlib** and **Seaborn**.
- Performing EDA helps in seeing what the data can tell us.



# EDA (continued)

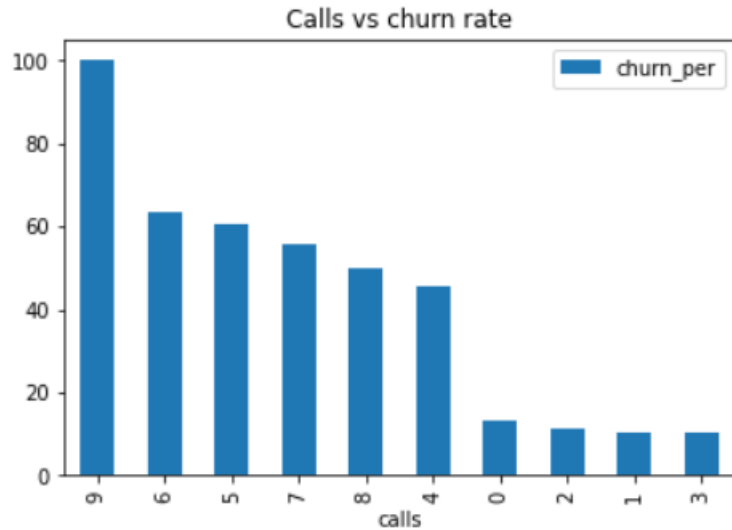
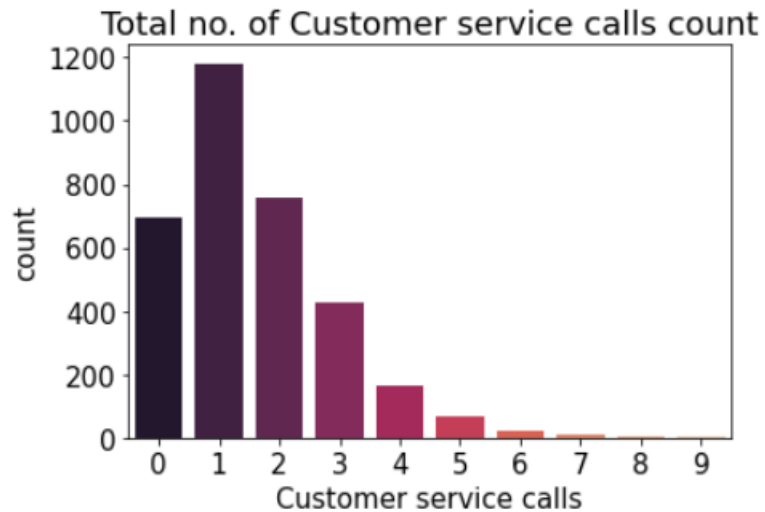


# EDA (continued)



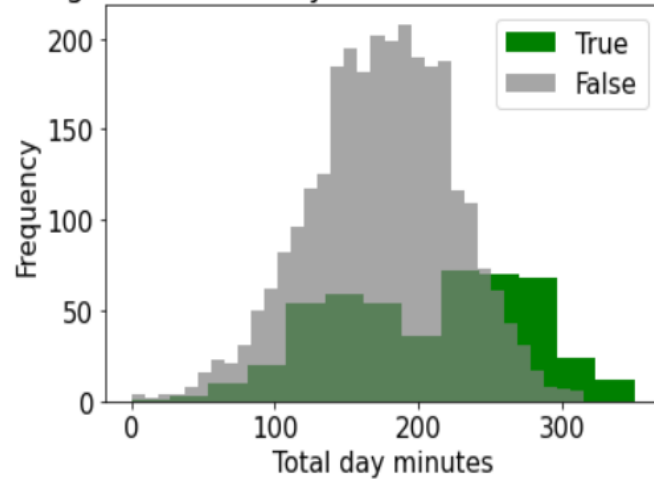


# EDA(continued)



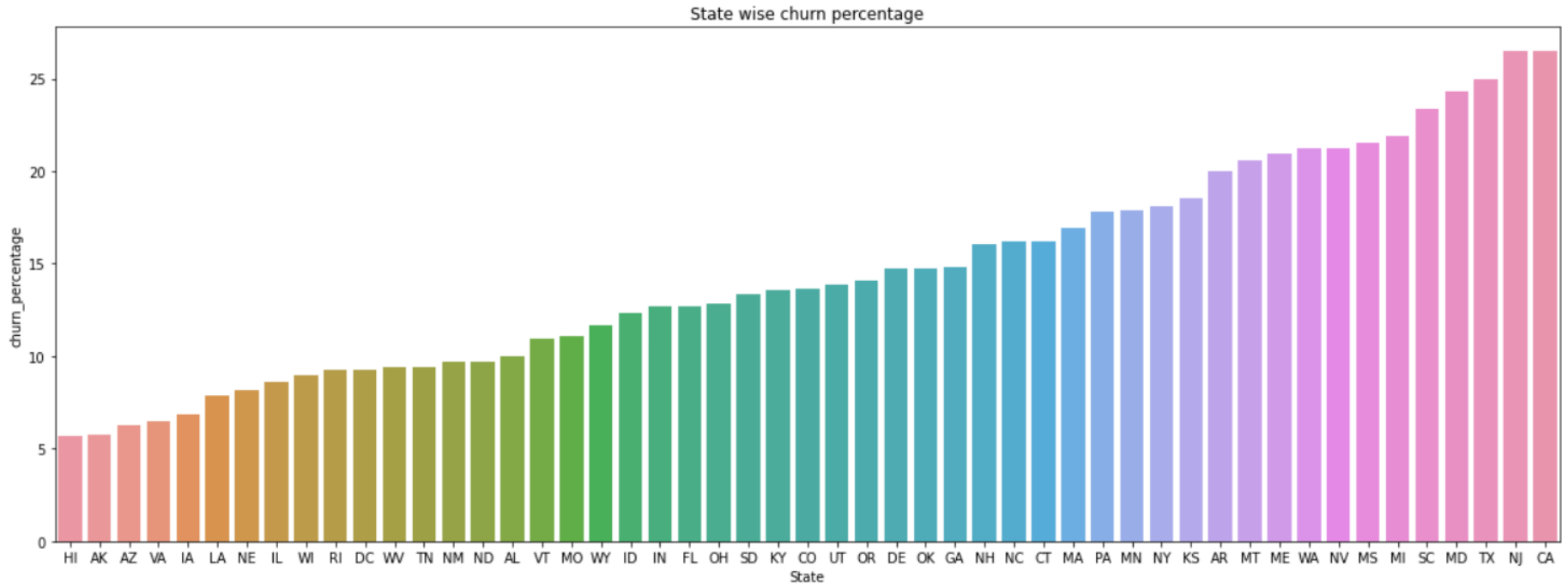
# EDA(continued)

Histogram of Total day minutes breakdown by Churn

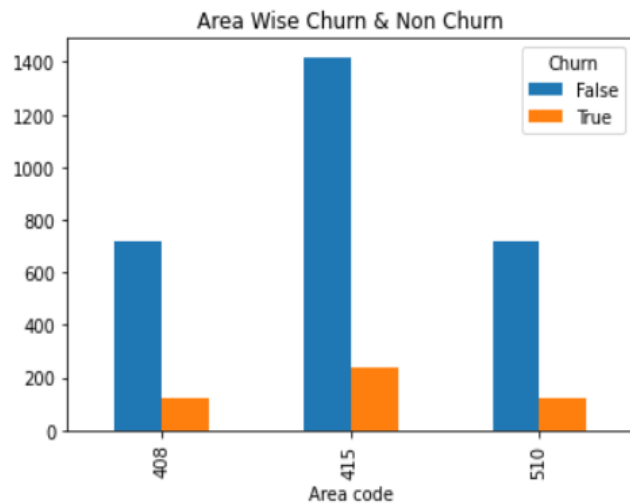


# EDA (continued)

## State wise churn percentage:-

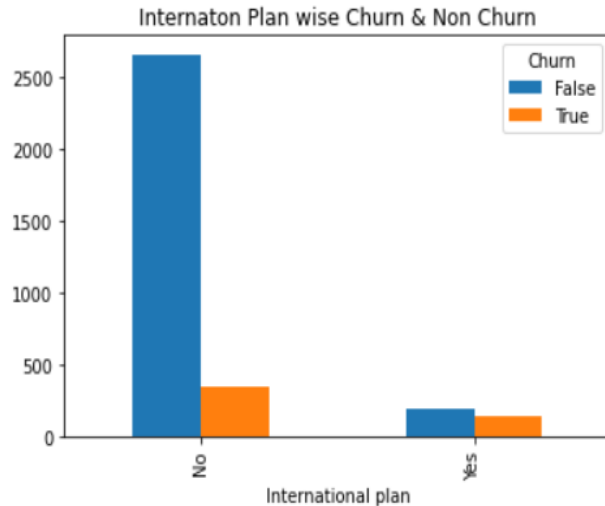


# EDA (continued)



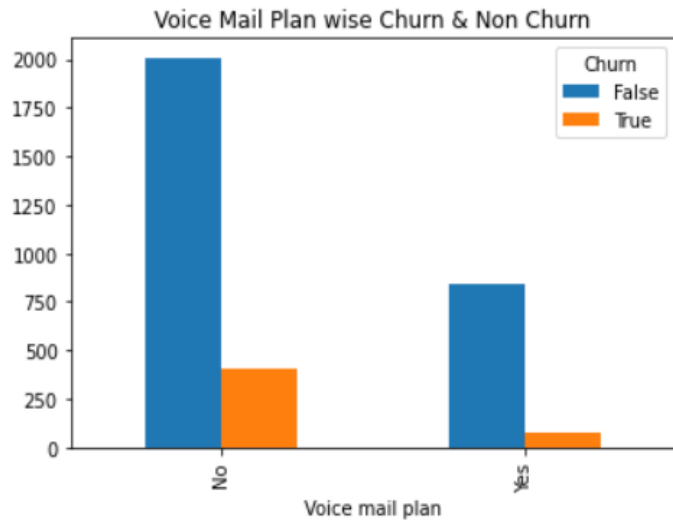
|           | Non Churn | Churn | churn_per |
|-----------|-----------|-------|-----------|
| Area code |           |       |           |
| 408       | 716       | 122   | 14.558473 |
| 415       | 1419      | 236   | 14.259819 |
| 510       | 715       | 125   | 14.880952 |

# EDA (continued)



11.5 % churn rate for no international plan & 42.41 % for international plan

## EDA (continued)



16.7 % churn rate for no voice mail plan & 8.6 % for voice mail plan

# Observations

- Churn rate increases with increase in customer service calls
- Customers with longer talk time in the morning have high chance of discontinuing the subscription.
- High populated areas have high churn rate.
- Customers with international plan have high chance of leaving the subscription.
- For customers with no voice mail plan, the chance of discontinuing the subscription is greater than those with voice mail plan.



# Conclusion

From the observations, we can conclude that the company needs to work on the following fields for customer retention:

- Offer better service in most populated areas.
- Provide better long talk time plans.
- Take feedback and suggestions on a regular basis, try to implement it and strive for better communication.
- Company can offer better International plans.
- Offer more Incentives in the form of discounts and cashbacks to churn customers





# Challenges

- Selection of features was quite a challenge.
- For some of the variables like **'Account length'**, we have no idea about its relevance to Churn.
- We cannot consider all these variables as the exact reasons why customers left because they might leave for the better price offered by competitors or the bad economy at a certain time, etc.
- Churn does not take into consideration the types of customers that are leaving – new vs old



# Thank You